

WE CLAIM:

1. An isolated nucleic acid encoding a yeast lactate dehydrogenate protein having an amino acid sequence identified by Seq. ID No. 22.
2. An isolated nucleic acid encoding a yeast lactate dehydrogenate protein having an amino acid sequence identified by Seq. ID No. 30.
3. An isolated nucleic acid according to Claim 1 encoding a yeast lactate dehydrogenate protein that hybridizes to a nucleic acid probe identified by Seq. ID No. 21 under high stringency conditions.
4. An isolated nucleic acid according to claim 3 wherein hybridization is detected after washing under high stringency conditions.
5. An isolated nucleic acid according to Claim 2 encoding a yeast lactate dehydrogenate protein that hybridizes to a nucleic acid probe identified by Seq. ID No. 29 under high stringency conditions.
6. An isolated nucleic acid according to claim 5 wherein hybridization is detected after washing under high stringency conditions.
7. A recombinant expression construct comprising a nucleic acid having a nucleotide sequence encoding a yeast lactate dehydrogenate protein according to Claims 1 or 2, wherein the nucleic acid is expressed in a yeast cell.
8. A recombinant expression construct according to Claim 7, further comprising a yeast promoter operably linked to the nucleic acid encoding a yeast lactate dehydrogenate protein.
9. A recombinant expression construct according to Claim 7, further comprising a yeast transcriptional terminator element operably linked to the nucleic acid encoding a yeast lactate dehydrogenate protein.
10. A recombinant expression construct according to Claim 7, further comprising a yeast replication element derived from a yeast 2-micron circle plasmid.
11. A yeast cell transformed with the recombinant expression construct of Claims 7, wherein the transformed cell expresses the yeast lactate dehydrogenate protein.
12. A yeast cell according to Claim 11, wherein the yeast cell is a yeast from genera *Saccharomyces*, *Kluyveromyces*, *Hansenula*, *Candida*, *Trichosporon*, *Yamadazyma*, *Torulaspora* or *Pichia*.
13. A yeast cell according to Claim 11, wherein the yeast cell expresses

a crabtree-negative phenotype.

14. A yeast cell according to Claim 11, wherein the yeast cell is a yeast species selected from the group consisting of *C. soronensis* and *K. marxianus*.

15. A yeast cell according to Claim 11, wherein the yeast cell produces
5 a reduced amount of a glycolytic enzyme selected from the group consisting of pyruvate decarboxylase, alcohol dehydrogenate, and acetyl-CoA synthase.

16. A method for producing lactic acid comprising the step of fermenting a yeast cell culture according to claim 11 in a nutrient medium containing a sugar under conditions whereby at least 50% of the sugar is converted
10 by the yeast cell to lactic acid.

17. The method of Claim 16, wherein the yeast cell is grown at a temperature from about 35°C to about 55°C.

18. The method of Claim 16, wherein the nutrient culture has a pH less than about pH 5.0.

15 19. The method of Claim 16, wherein the yeast is grown under substantially anaerobic conditions.

20. The method of Claim 16, wherein the yeast cell is a crabtree-negative yeast cell

20 21. The method of Claim 20, wherein the yeast cell is *K. marxianus* or *C. sonorensis*.

22. The method of Claim 16, wherein the yeast cell produces a reduced amount of a glycolytic enzyme selected from the group consisting of pyruvate decarboxylase, alcohol dehydrogenate, and acetyl-CoA synthase.

23. The method of Claim 16, wherein the sugar is glucose, xylose,
25 ribose, arabinose, mannose, galactose, fructose, maltose or lyxose.